

# ***COOPERATIVE AGREEMENT***

**511-A-00-04-00237-00**

## ***FOURTH QUARTERLY REPORT***

**04/01/2005 - 06/30/2005**

# **World Wildlife Fund**

Date Submitted: Friday, July 29th 2005



## **Southwestern Amazon Moist Forest Ecoregion**

### ***Valorization and Understanding of the Protected Areas of the Amboró - Madidi Corridor (CAM) in Order to Facilitate their Conservation***

***Third Quarterly Report (April 1<sup>st</sup> – June 30<sup>th</sup>, 2005)***

#### **Strategic Goals and Objectives**

##### **Goal:**

Create a favorable climate among the local population of the Amboró-Madidi Corridor (CAM) by favoring their participation in the process for the creation and management of protected areas, their education, information and environmental awareness and the joint visualization of the natural attributes of the protected areas in relation to the environmental services and its consequent potential to support sustainable economic activities for the region in which they are found.

##### **Objectives:**

- **Conservation:** Achieve the effective support from local communities and regional authorities for the Altamachi Protected Area ensuring its confirmation and achieving its declaration (recognition of the national government through a Supreme Decree). The AP Altamachi was created by the “Prefectura de Cochabamba” under a scientific model of identification and characterization as well as a participatory process of consultation. With this, it is intended that one of the last and best preserved areas of the Yungas in Bolivia is placed under definitive protection and management, avoiding the advancement of deforestation within its limits.
- **Joint Planning:** Achieve the joint participation of the authorities and civil society in order to confront the threat of social and political opposition aimed at protected areas through the organization of joint activities and the search of synergies for individual activities:
  - ❖ **CAM Coordinating Committee (CCCAM):** Ensuring its continuity as an organism for discussion and technical planning and the gradual inclusion of additional authorities (Land Tenure, Popular Participation and municipalities when and if possible) and other local actors converting them in a forum for critical review and coordination.
- **Education, information and environmental awareness:** Consolidate the management of the Amboró Interpretive Center as a partnership model between protected areas and municipalities and as sources of education, information and environmental awareness for the local population.
- **Visualization of potential for sustainable economic activities:** Carry out a study regarding the value of the environmental services of the water forthcoming from two

protected areas within the CAM that neighbor important cities for their valorization among the local population and to offer information and ideas regarding sustainable economic alternatives for the users (municipalities, “regantes”, businessmen and general population).

### **Collaborators/Partners**

- \* SERNAP - Servicio Nacional de Áreas Protegidas (National Service of Protected Areas)
- \* DGB - Dirección General de Biodiversidad (General Directorate for Biodiversity)
- \* FAN - Fundación Amigos de la Naturaleza (Friends of Nature Foundation)
- \* Tropico - Asociación Boliviana para la Conservación (Bolivian Conservation Association)
- \* ICIB - Instituto para la Conservación e Investigación de la Biodiversidad (Institute for Biodiversity Conservation and Research)
- \* CIDEDER - Centro Integrado de Defensa Ecológica y Desarrollo Rural (Integrated Center of Ecological Defense and Rural Development)
- \* FUNDESAP - Fundación para el Desarrollo del Sistema Nacional de Áreas Protegidas (Foundation for the Development of the Protected Areas System )
- \* REMA - Rescate en tus Manos (Rescue in your Hands)
- \* PNC Parque Nacional Carrasco (Carrasco National Park)
- \* APA Área Protegida Amboró (Amboro Protected Area)
- \* CI - Conservation International
- \* WCS - Wildlife Conservation Society
- \* TNC – The Nature Conservancy
- \* CSF – Conservation Strategy Fund
- \* Fundación Natura Bolivia – Foundation Natura Bolivia
- \* Local stakeholders – Prefectures (Office for Natural Resources and the Environment - Cochabamba), Municipalities (Municipality of Buena Vista, Municipality of Buena Vista) and Organizaciones Territoriales de Base - OTB (Local Community Organizations, e.g., OPIM).
- \* CODAC – Comité de Defensa del Medio Ambiente de Cochabamba (Committee for the Defense of the Environment from Cochabamba)
- \* Fundación Bosques (Forest Foundation)
- \* TCO Mosekene (Mosekene Indigenous Communal Land)
- \* SNAP - Sistema Nacional de Areas Protegidas (National System for Protected Areas)

### **Summary: Period 04/01/05—06/30/05**

#### **Results by Objective and Activity**

Objective I: Creating a favorable working environment by raising public-local awareness regarding the Area’s importance and in this way, supporting the process for the Supreme Decree ratifying the Altamachi Protected Area created by the Departmental Council of Cochabamba.

As per the Third Quarterly Report, and as a consequence of the derogation of the protected area status for Altamachi, the activities related to this goal were revised and the following were agreed upon:

- a. Institutional support for CIDEDER for improving their technical capacities.
- b. Support for the improvement of relations between promoters of the PA and neighboring populations

- Work on the management of natural resources with the communities of Totolima and Carmen Pampa.
- Collaborate with the Mosekene TCO, neighboring Altamachi, as a means to control the illegal logging which is currently the main conservation threat faced by the proposed Altamachi Protected Area.
- Facilitating coordination between the Forest Superintendence and the OPIM.
- c. Hiring of two (2) farming and animal husbandry technicians as outreach and /or environmental promoters to work in Totolima and Carmen Pampa.
- d. Carrying out a baseline diagnosis regarding the social conflicts and thus be able to clearly identify the information needs as well as those for conflict resolution
  - Support the Prefecture's Office for Natural Resources and the Environment, so they bring together the inter-institutional commission that is responsible for discussing and agreeing upon measures to ensure the protection and sound management of Altamachi.
- e. A radio information and dissemination campaign regarding the values of the PA but also including programs of technical interest for the local population
  - Develop a communication strategy based on a rapid appraisal of the perception of local people regarding conservation issues and the Altamachi area.
  - Establish a coordinating entity to lead the environmental opinion in Cochabamba but that is also the result of joint institutional efforts.
- f. Support the process to obtain legal paperwork (Cancelled)

The progress achieved so far in the implementation of the aforementioned contract is described below.

- a. Institutional support for CIDEDER to improve their technical conditions.

The WWF technical staff has supported CIDEDER in different technical and coordination meetings with the Municipality of Tiquipaya. As a consequence of these meetings, some organizational weaknesses were identified in CIDEDER mostly regarding conflict resolution and planning skills, and thus its staff will be receiving training in adaptive planning and management.

- b. Support for the improvement of relations between promoters of the PA (CIDEDER) and neighboring populations.

To begin working in a coordinated manner, CIDEDER created dialogue opportunities with community and municipality authorities in the region, in which the following project objectives were presented:

- Hiring of four park rangers in the OPIM.
- Elaborate a productive development model for the Project area.
- Elaborate thematic contents for the training events (bee keeping, horticulture, environmental education)
- Coordinate health and nutrition activities with the Municipality of Tiquipaya.
- Coordinate activities with farming communities involved in the Project.

The results of these meetings were as follows.

After a meeting with the **municipal government of Tiquipaya** and its entire technical team, and other meetings with different actors (currently working on the implementation

of their Annual Operating Plan in the highlands of Tiquipaya) it was agreed that a coordinating entity of the organizations working in the highlands would be conformed with the participation of: CEDESCO, KURMI, FUNDACION BOSQUES, CLAS, Q'ALLARIY, KAWSAY, VSF-CICDA, NEGOWAT, community authorities of Montesillo Alto, Carmen Pampa, Totolima, and municipal government and technical staff. The purpose of this coordination is to establish a development plan for the Tiquipaya highlands reducing thematic and geographic overlap. With this in mind, progress was made in terms of a situational analysis in which threats, weaknesses and strengths were identified. Also, CIDEDEP and the Municipality of Tiquipaya elaborated an agreement that has already received executive approval and that is now awaiting approval by the City Council.

Two meetings were held to present the Project to the communities of **Carmen Pampa and Totolima** and to the technical staff from their municipalities. Another important aspect was that the city council of Tiquipaya had a session in Montesillo Alto which gave a message as to the importance that the communities have in this area of the municipality.

After the meetings, discussions started to develop a participatory model for productive sustainable development with the communities of Totolima and Carmen Pampa. Also, training booklets (guidebooks) were prepared for agro forestry systems and for the management of organic vegetable gardens. This was the beginning of practical – theoretical training for families in the community of Carmen Pampa. Nineteen individuals, including men and women, participated in the training, which also included the identification of an agro-forestry parcel (total 1.7 ha) in which the training activities were implemented.

A meeting was also held with the **OPIM (Organización del Pueblo Indígena Mosesten)** for the implementation of the activities, but this was postponed until the new organization's authorities are elected, in July. However the current OPIM authorities expressed that they would like the coordination process to be referred to a longer term and to include additional priorities.

Finally, a meeting was held with the **Cochabamba Forest Superintendence** to see how coordination can be carried out for the fiscalization in the area of Covendo in La Paz (from where most illegal loggers enter the Mosesten TCO and the Altamachi). The Superintendent indicated that they do not have the means to carry out fiscalization in the area but that they were willing to work on a strategy to join efforts with other actors.

c. Hiring of two farming and animal husbandry technicians as outreach and /or environmental promoters to work in Totolima and Carmen Pampa.

Two field technicians were hired to promote natural resource management in the communities of Totolima and Carmen Pampa, and their activities started already, as described in the previous section.

d) Carrying out a baseline diagnosis regarding the social conflicts and thus be able to clearly identify the information needs as well as those for conflict resolution and e) A radio information and dissemination campaign regarding the values of the PA but also including programs of technical interest for the local population.

Hoping to make some progress in the two aforementioned activities, WWF had the first meeting with the new environmental authority for Cochabamba, Mr. Augusto Mercado (Director for Natural Resources and the Environment in the Prefecture), who showed his commitment with the Altamachi region, and proposed a second meeting by the second week of July 05 to better define conservation strategies for Altamachi..

Objective II: Participation in the planning and participation process:

Activity 2.1.: CAM Coordinating Committee (CCCAM)

1. Ensure the functioning of the CCCAM and facilitate the participation and leadership of the DGB and SERNAP in the CAM Coordinating Committee.

This activity is implemented by the DGB with support from a facilitator. Below are described the achievements related to this activity.

**CCCAM meetings**

The facilitator convoked a meeting on April 8th, 2005 with the VRNMA. The meeting touched upon the following: a) review of the work plan for the CCCAM; b) review of the proposal for the policy structure regarding the Biodiversity Corridors; c) pressures on the CAM (northern corridor); d) GAP analysis; e) Inter-Andean dry valleys, and f) The NGO Trópico's work.

The most outstanding results of the meeting were:

- Elaboration of an agenda for the CCCAM meetings. This agenda was distributed to the members of the CCCAM via e-mail.
- SERNAP has a position and is ready to discuss the topic of Biodiversity Corridors and which should be the basis for the discussions within the Vice Ministry.
- The discussion on corridors should occur first at the government level, but for this all NGO's should contribute with their approaches about corridors.
- Approaching the IDB was suggested regarding the Northern Corridor.

The DGB, via the CCCAM facilitator also participated in the different meetings related to conservation and natural resource management.

**Follow-up for conflicts in the CAM**

Edwin Camacho, the CCAM facilitator, participated in different meetings where the conflicts related to the following Protected Areas (PA) were addressed:

PNANMI Madidi. Promoted by the Departmental Councilman for the Iturralde Province, and to a lesser degree by municipal authorities from Ixiamas, the reason of the conflict was their demand for a co-administration of this protected area, and for being appointed as the collectors of the fees for tourism use in the PA (SISCO). The Director for SERNAP, with support from the person responsible for conflict resolution within the Vice Ministry of the Interior, managed the conflict, clarifying that the co-administration should be carried out with all of the Protected Area municipalities.

Pilon Lajas Biosphere Reserve and TCO: the newly elected Steering Committee was objected by representatives from the TCO, claiming that it was conformed without the participation of the representatives from the TCO. It was agreed that a follow-up committee would be organized in order to allow for a balanced evaluation of the relationship TCO – Protected Area.

### **Follow-up to the Northern Corridor**

Edwin Camacho, following the recommendations of the CCCAM meeting from April 8th, 2005, has participated in different meetings related to the Northern Corridor:

Together with WCS and SERNAP the potential impacts of the Northern Corridor were analyzed, leading to the conclusion that from a biodiversity point of view it could foster additional unplanned settlements in the area of the Amboró – Madidi Corridor. It would also affect key habitats for threatened species such as two monkeys from the *Callicebus* genus and the *Ara glaucogularis*, not to mention the dynamics of one of the world's greatest wetlands. On the other hand, the Strategic Environmental Evaluation (EAE) that is being carried out in the Northern Corridor has weaknesses and gaps because it has not discussed the previously mentioned aspects. It was decided to make contact with the National Road Service (SNC) to obtain an update on the current situation of the Project and its EAE.

The contact with the National Road Service led to a meeting that included the DGB and SERNAP as well as a representative from the DHV, the consulting firm which carried out the EAE in the Northern Corridor. Both the SNC and DHV indicated that the EAE is under development and that local actors as well as the environmental sector would be convoked for a public consultation.

2. Support the elaboration of the conceptual proposal for the CAM with the organizations that make up the Coordinating Committee and with other organizations linked to the CAM (elaborate the conceptual and operational basis in order to generate opportunities to discuss the establishment of corridors).

A Vice Ministry level draft policy strategy for corridors was prepared and discussed within the CCCAM, taking into consideration the protected area policies developed by SERNAP, as well as the National Strategy for Biodiversity and the Policy for Hydric Resources. The norms related to protected areas were also reviewed.

Still pending is the internal workshop between the DGB and SERNAP for discussing the policies regarding corridors. This workshop has not yet been possible due to various problems that have arisen regarding protected areas.

3. Carry out workshops to establish a conceptual vision of the CAM and define mechanisms to incorporate the concept within different governmental entities.

Two workshops were carried out:

- The presentation of the vision for the Amboró Madidi Corridor (CAM) which was elaborated by FAN with funds from TNC, CI and WWF and which identifies important conservation areas. Different relevant actors participated in the workshop (Directors for Natural Resources and the Environment from

the Prefectures of La Paz, Beni, Cochabamba and Santa Cruz), Ministry of Public Works and Infrastructure, Vice Ministry of Hydrocarbons, Office for Land Tenure, Watershed Office, Agrarian and Forestry Superintendence, AOPEB). The general comments were that the different institutions need to analyze the information and maps and also if they are available to be used by other institutions. The most important aspect of the meeting was that the participants were from institutions that normally do not participate in this kind of meetings. Although most of them disagreed with the form in which their activities were included into the analyses, they were open to later discussions.

- Map of Areas of Interest for Conservation. This map was produced by the DGB during the last administration period with support from experts and a consultant to analyze the information and be able to produce the map based on secondary biological information. The primary use of this map was to provide the Agrarian Superintendence with a map they can use when developing or approving the POP (Plots Land Use Plans) or for further considerations in areas considered important. During the meeting weaknesses in the map were detected and it was agreed that it needed to be improved through increased participation from experts. In this workshop, as in the previous one, the same organizations participated and their concerns were similar.

Objective III: Education, information, and environmental awareness:

Activity 3.1.: Hiring of staff to run the Center and guarantee its operations.

This activity includes actions ranging from the hiring of staff for the administration of the interpretive Center to the organization and planning of visits to the Center and La Yunga for students from 10 municipalities that encompass the Amboro National Park or adjacent to it, in support of their academic formation as well as improving their perception of the PA.

1. Hiring staff to administer the Interpretation Center as well as to explore how the Center can be co-administered between the Amboró Protected Area and the Municipality.

The Amboró Protected Area administration has elaborated a draft manual for the Management of the Interpretation Center taking into consideration the Protected Area policies. On the other hand the Protected Area has participated with REMA in all of the activities organized by them, ranging from the elaboration of the schedule to the delivery of the prizes (described further on).

The Protected Area administration held a meeting with the person in charge of tourism for the Municipality and with whom a meeting was set up for July with the Mayor and the Director of Amboro National Park in order to discuss the progress regarding the Center's co-administration. Apparently a series of problems inherent to the PA administration have prevented its Director from giving the expected priority to this initiative; henceforth, no progress was made in the purpose of reaching a co-administration agreement for the Center, between the Municipality and the APA.



On the other hand, a meeting was held with the Tourism and Development Foundation to coordinate activities in the Center.

Finally, an inventory was carried out to verify the status of the Interpretation Center. Based on the inventory carried out, maintenance and repairs were carried out for the lighting system in the exhibit area as well as general maintenance for the two interpretive trails.

2. Organization and planning of visits of students from 10 municipalities to the Center and La Yunga, as an environmental education process for the communities surrounding the Protected Area and promote the functioning of the Interpretation Center (in the North) and in La Yunga (in the South).

Two educational guides were hired to guide and orient student visitors to the Amboró Interpretation Center in Buena Vista as well as for the general support for the Center. Training was provided regarding interpretation trail, nature interpretation, educational reform, dealing with the public and first aid.

As previously reported, the selection of the classes to be awarded with a trip to the Interpretation Center or La Yunga had the following process: a) Elaboration and dissemination of summons, b) Evaluation and selection of research initiatives, c) Awarding of prizes.

Through the Educational District Office and press (press and TV) 506 schools were summoned. A press conference was organized for Santa Cruz de la Sierra in which 13 different media participated.

5,415 students participated from 76 schools distributed throughout 44 communities from the nine municipalities (Annex 1.) presenting their research according to what was specified in the summons.

The research projects presented were jointly evaluated in each municipality, and when available, by the Municipal Government, District School Board and REMA.

A total of 87 winners were selected reaching 1,319 students plus 180 individuals including teachers, parents, and authorities for a total of 1,499 individuals which received prizes and of which 570 visited the Ecotourism Center in La Yunga in Mairana and 929 the Amboró Interpretation Center in Buena Vista.

In the public ceremony, REMA, together with the District Educational Office, awarded the prizes to the winners. Municipal government, district directors, representatives from the Amboró Protected Area, school directors, teachers, students, press and general public also participated (see the description of the prizes granted in Annex 2).

The steps after the Awarding of prizes were: a) Elaboration of schedule of visits, b) Before and after evaluations and c) visit to La Yunga or Interpretation Center.

Through the schedule of visits, between May 31 and June 21 the visits to La Yunga Ecotourism Center were carried out. Prior to and after the visit to La Yunga and the Amboró Interpretation Center a questionnaire was filled out regarding the natural

richness of Amboro National Park. The students in the municipalities of Comarapa, Pampa Grande, Mairana and Samaipata had already been evaluated.

Activity 3.2.: The initiation of a program for the production and sale of souvenirs from the Protected Area.

This activity was delayed because we needed USAID's approval to include FUNDESNAPE as a partner for the project, and the contract needed to be approved by USAID too. The contract that will be signed with FUNDESNAPE implies a transfer of funds for the production of souvenirs.

Objective IV: Visualization and Identification of the Value of the Environmental Services Provided by Water Coming from Amboró and Carrasco.

The progress during this trimester regarding The Conservation Strategy Fund (CSF) was the following:

- a. Collecting of all available secondary information in Cochabamba and Santa Cruz related to municipal planning and to the use of natural resources and environmental services in the municipalities with jurisdiction in the Carrasco and Amboró National Parks.
- b. Analysis of information collected, selection of information to be used in the analysis and identification of information gaps.
- c. Analysis of case studies regarding environmental services in Bolivia.
- d. Elaboration of a GIS with maps collected.
- e. Two discussion meetings with institutions (FAN and Fundación Natura Bolivia) that have experience in Environmental Services in one of the two protected areas, to see how to coordinate and involve them in the proposed work.
- f. Elaboration of a progress report that includes different aspects (Annex 3). The report highlights that any country will allocate its resources for investments (in conservation and use) for whatever resources whose value is known, and that the value of ecosystems is generally unknown. Most analysis of the economic value of resources is based on short term benefits (soil productivity, yearly harvests), and the country's political decisions are based on indicators such as the GDP, balance of payments or tax collection. Variables including ecosystems services are not included or recognized.

Therefore some answers for the following questions must be clear: what is the value of a particular ecosystem? for whom? who benefits from the services it provides?. It must be noted that the continuity of an environmental service represents a benefit for some and a loss for others.

It is necessary to distinguish between "the value of conserving an ecosystem" and "the value of converting it into another use", being both very different starting points that will generate completely different answers.

It is difficult to value the level of dependency of the human economy on the ecosystems' provision of a variety of biological and chemical processes absolutely essential for human life, compared to the more familiar uses of plants and animals.

Regarding the analysis of national experiences, the report just describes the studies without analyzing the methods used, nor discussing how they could be useful for the present study. Also lacking is a description of the population surrounding the Carrasco and Amboro PA and thus depending on the environmental services they provide, though we recognize that establishing the area of influence of both areas and their environmental services will be complex, as we are dealing with linear systems (rivers).

The preliminary analysis has also shown the lack of information to estimate the value of the environmental services, leading the Consultant to highlight the limitations to be expected from the study (for example, the direct, indirect, substitute use, and the “no-use” values will only be analyzed according to the information available). The situation, information-wise, also requires alternative methodologies to answer some of the study’s concerns.

Other important aspect related to the type of information available, identified by the Consultant, is that the analysis will have to be carried out at the municipal level, instead of the basin and sub-basin level. This is interesting because the municipal governments are the primary decision-makers for local investments, but in order to be more precise we still should have the sub-basin analysis, though this would require more time and funding, because it will imply starting from basic data collection.

The great number of small and medium irrigation projects that depend or will be depending on the water provided by these two protected areas is interesting because their own analysis already includes variation values related to production levels. Based on the averages used by these projects, a global analysis of the irrigation systems for both areas will be made. The results of this analysis will help establish a projection of the water use and the associated change in agricultural and farming production, and could be used in the valorization of this service (water), and therefore for the valorization of the two protected areas providing it, Amboró and Carrasco.

**Table of Final Accomplishments**

<b><u>Benchmark Number</u></b>	<b><u>Benchmark/Output</u></b>	<b><u>Status*</u></b>
1.1.	❖ Institutional support for CIDEDER	On-track
1.2.	❖ Hiring of two (2) farming and animal husbandry technicians as outreach and /or environmental promoters	Completed
1.3.	❖ Support for the improvement of relations between promoters of the PA and neighboring populations	On-track
1.4.	❖ A radio information and dissemination campaign regarding the values of the PA but also including programs of technical interest for the local population	Delayed
1.5.	❖ Carrying out a baseline diagnosis regarding the social conflicts and thus be able to clearly identify the information needs as well as those for conflict resolution	Delayed
1.6.	❖ Support the process to obtain legal paperwork	Cancelled

2.1.	❖ CAM Coordinating Committee (CCCAM).	On-track
3.1.	❖ Hiring of staff to run the Center and guarantee its operations	On-track
3.2.	❖ The initiation of a program for the production and sale of souvenirs from the Protected Area	Delayed
4.1.	❖ Visualization and Identification of the Value of the Environmental Service Provided by Water Coming from Amboró and Carrasco	On-track

- Status may include activities that are completed, on-track, delayed, mixed performance, or cancelled.

## Project Evolution

The activities in Altamachi have made progress with a high level of coordination among the different municipal, community and departmental authorities. However, it is important to highlight that in the activities with the Municipality of Morochata (that includes a large part of the area covered by the ex-Altamachi Protected area), progress has not been made because there is still not an opportunity to initiate dialogue. However, the hiring of a facilitator is being analyzed together with the Director of Natural Resources and the Environment of the Prefecture and that would include an expert in conflict resolution so that the possibility of initiating dialogue can be explored and hopefully the identification of areas of convergence upon which some sort of conservation strategy for the area north of Morochata can be considered.

Regarding the CCAM Coordination, in spite of having agreed with the DGB that the activities of the facilitator should be primarily related with the CAM and based on his TOR, this is not always so mainly because the DGB does not have sufficient staff and because the level of coordination within the CAM is complicated. This is primarily due to the fact that the individual agendas of each institution within the CCCAM are different and to date this has not improved. Thus we feel it is necessary to jointly analyze the usefulness of this coordination space. Although we know of the importance of CCCAM through information communications perhaps it is not fulfilling the expectation of its different participants.

The activities associated with the functioning of the Interpretation Center and the programmed visits to La Yunga have progressed and generated considerable expectations in the students from the different educational centers. The model of having a facilitator in the implementation process for the activities with the Protected Areas is interesting and has allowed for the activities to move forward and not be delayed due to other priorities that come up within the Protected Area. However, this model also causes susceptibilities at the protected area level and it is thus necessary to work on this aspect in order to improve the articulation between the protected area and the facilitators.

On the other hand, we feel that we could have better progress in the Visualization and Identification activity regarding the Value of Environmental Service Provided by Water Coming from Amboró and Carrasco even though the report does indicate certain advances. Probably one reason why the progress made is less than expected is the absence of the executing organization in the area or alternately, of partnerships between the executing entity and the local organizations working on similar issues in the country. Such partnerships could benefit the research, increasing opportunities for obtaining information about the area the socio-political aspects present in the country and related to the access to natural resources.

## ANNEXES

### Annex 1. Number of students and schools per community and municipality

Nº	Municipio	Comunidades	Nº de Unidades Educativas	Nº de Estudiantes
1	Buena Vista	Buena Vista	7	250
		Villa Amboró	1	80
		Huaytú	1	80
		Santa Rosa de Amboró	1	80
		San Miguel Afuera	1	80
2	Samaipata	Bella Vista	1	30
		Cuevas	1	100
		Paredones	1	35
		Bermejo	1	120
		Tocos	1	240
		Valle Abajo	1	60
		Santiago del Valle	1	120
		San Antonio	1	25
		San Isidro	1	30
		El Surtidor	1	30
		Samaipata	5	200
3	El Torno	El Torno	2	30
4	Porongo	Porongo	1	30
		Nueva Palestina	1	30
		Santa Fe de Amboró	1	30
5	Pampa Grande	Los Negros	5	150
		Mataral	1	240
		Agua Clara	1	120
		Palmasola	1	30
		Pampa Grande	3	330
		Algodonal	1	30
		Valle Hermoso	1	30
		Santa Rosa de Lima	1	30
		Sivingalito	1	30
		Zanjón	1	30
		El Pacay	1	240
6	Mairana	Mairana	4	500
		Hierba Buena Militar	1	30
7	Santa Cruz de la Sierra	Santa Cruz de la Sierra	10	1050
8	Yapacaní	Puerto Avaroa	1	95
		San Antonio	1	50
		Yapacaní	2	120
		San Isidro	1	60
		Moiler Avaroa	1	80
9	Comarapa	Torrecillas	1	110
		Comarapa	3	270
		San Isidro	1	50
		San José de Pulquina	1	30
		Siberia	1	30
TOTAL			76	5415

## Annex 2. Prizes for the winning courses of the aid "Past, present and future of my community" and "Use of plants"

Lugar	Premio
Primer lugar	<ul style="list-style-type: none"> <li>❖ Un vale simbólico que acredita el viaje al Centro Eco turístico La Yunga en Mairana o al Centro de Interpretación en Buena Vista.</li> <li>❖ Cuaderno y lapicero para cada alumno y los acompañantes del curso, entregado el día de la visita.</li> </ul>
Segundo lugar	<ul style="list-style-type: none"> <li>❖ Un vale simbólico que acredita el viaje al Centro Eco turístico La Yunga en Mairana o al Centro de Interpretación en Buena Vista.</li> <li>❖ Cuaderno y lapicero para cada alumno y los acompañantes del curso, entregado el día de la visita.</li> </ul>
Tercer lugar	<ul style="list-style-type: none"> <li>❖ Un vale simbólico que acredita el viaje al Centro Eco turístico La Yunga en Mairana o al Centro de Interpretación en Buena Vista.</li> <li>❖ Cuaderno y lapicero para cada alumno y los acompañantes del curso, entregado el día de la visita.</li> </ul>
Cuarto lugar	<ul style="list-style-type: none"> <li>❖ Un vale simbólico que acredita el viaje al Centro Eco turístico La Yunga en Mairana o al Centro de Interpretación en Buena Vista.</li> <li>❖ Cuaderno y lapicero para cada alumno y los acompañantes del curso, entregado el día de la visita.</li> </ul>
Quinto lugar	<p>Cada alumno recibió:</p> <ul style="list-style-type: none"> <li>❖ Bolsa de papel madera con útiles escolares: <ul style="list-style-type: none"> <li>○ Cuadernos,</li> <li>○ Fólder con hojas,</li> <li>○ Lapiceros de 2 colores</li> <li>○ Regla de 20 cm</li> </ul> </li> </ul> <p>Los cuadernos contienen información relevante del APA, así como todos los materiales llevan un eslogan asociado al APA ("Conocer para conservar, Parque Amboró". En total de entregaron 600 paquetes.</p>
Sexto lugar	<p>Cada curso recibió:</p> <ul style="list-style-type: none"> <li>❖ Un paquete de material deportivo: <ul style="list-style-type: none"> <li>○ 2 Pelotas de básquetbol</li> <li>○ 1 pelota de fútbol</li> <li>○ 1 pelota de voleibol</li> <li>○ 1 pelota de fútbol de salón.</li> </ul> </li> </ul>

### **Annex 3. Aspects included in the interim report for the Visualization and Identification of the Value of the Environmental Services Provided by Water Coming from Amboró and Carrasco**

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#### **1. Introduction**

#### **2. Valorization of environmental services**

Conceptual framework

#### **3. Importance of environmental services**

Description of the environmental services per type of ecosystem (Annex 4)

#### **4. Main techniques for valorization**

An analysis of the different valorization techniques considering the following aspects: Methodology, focus, application, information requirements and limitations (Annex 5).

#### **5. National experiences**

Provides a preliminary list of cases analyzed to date.

- Study of the Economic Valorization of the Environmental Services Regarding the Provision of Water from the Sama Mountain Range. (Juan Carlos Brezó and Carmen Crespo) Elaborated by PROMETA and sponsored by USAID – TNC.
- Study regarding the Economic Valorization of the Environmental Services of the Comarapa River Watershed, Santa Cruz, Bolivia. Steven Shultz, & Bruno Soliz.

#### **6. The conditions of the area of study**

#### **7. Description of variables**

#### **8. Analysis of variables directly related to the environmental services provided by the Amboró and Carrasco Protected Areas**

Fishing activities - Villa Tunari – .

Irrigation projects and variation in production levels.

Irrigation Project Thaq'ó Pamapa-Alizar Pojo - Carrasco.

Irrigation Project Ashka Yacu, Totorá – Carrasco.

Economic valorization of the tourism potential in the Cavernas del Repechón

- Carrasco National Park.

#### **Annex**

#### **Preliminary maps of the study area.**

Study area – baseline map.

Main populated area and municipal boundaries

Current land use

Agro-ecological zoning

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## Annex 4. Main ecosystems and the services provided (MA, 2003)

	Tipos de ecosistemas									
	Cultivado	Terrestres	Bosques	Urbano	Agua Dulce	Costeros	Marinos	Polar	Montañoso	Islas
<i>Servicios ambientales</i>										
Provisión de agua			■		■	■		■	■	
Alimentos	■	■	■	■	■	■	■	■	■	■
Maderas, combustible y fibras	■		■			■				
Productos innovativos	■	■	■		■		■			
Regulación de la biodiversidad	■	■	■	■	■	■	■	■	■	■
Ciclo de nutrientes	■	■	■		■	■	■			
Calidad de aire y clima	■	■	■	■	■	■	■	■	■	■
Salud humana		■	■	■	■	■				
Destoxificación		■	■	■	■	■	■			
Regulación de desastres naturales			■		■	■			■	
Culturales y sociales	■	■	■	■	■	■	■	■	■	■

Fuente: Millennium Ecosystem Assessment, 2003

## Annex 5. Economic valorization techniques for environmental services

Revealed preferred methods				
Función de producción o cambio de productividad	Asocia el impacto del cambio en el ecosistema a la productividad	Cualquier impacto asociado a la productividad	Cambio en el servicio, nivel de impacto en la producción, valor neto de los bienes producidos	Datos sobre el cambio del servicio y su consecuente cambio en la producción no muy perceptibles
Costo de enfermedad (Capital humano)	Asocia el impacto del cambio en el ecosistema a niveles de mortalidad y natalidad	Cualquier impacto que afecta a la salud (e.g. contaminación de agua y aire)	Cambio en el servicio, nivel de impacto en la salud (función de dosis-respuesta) costo de la enfermedad	Función de dosis-respuesta, asociada a los servicios ambientales de difícil definición, generalmente sub identificados.
Costo de reemplazo y sus variantes (costo de relocalización)	Utiliza el costo de reemplazar el bien o el servicio	Cualquier pérdida de bienes o servicios	Nivel de pérdida de bienes o servicios y el costo de reemplazarlos	Tendencia a sobrestimar el valor actual. Debería ser utilizado con precaución
Costo de viajes	Curva de demanda basada en los costos actuales de viaje	Recreación, parques nacionales con elevado nivel de turismo	Investigación/encuesta para obtener el valor monetario, de tiempo y distancia viajada	Limitado para beneficios recreacionales. Es complicado cuando el viaje es a múltiples destinos
Precios Hedónicos	Efecto extractado de los factores ambientales en bienes o servicios que incluyen estos factores	Calidad del aire, belleza escénica, beneficios culturales	Precios y características de los bienes y/o servicios	Requiere una gran cantidad de información. Muy sensible a especificaciones detalladas
Stated preference methods				
Valoración Contingente	Encuestas directas sobre la predisposición de pago	Cualquier tipo de servicios	Encuestas orientadas a definir la predisposición de pago por un servicio específico	Muchas posibles fuentes de error en las encuestas debido a prejuicios particulares
Modelo de selección	Lleva a los encuestados a elegir entre un set de alternativas con atributos particulares	Cualquier tipo de servicios	Encuesta a afectados	Similar a la Valoración Contingente. El análisis de los datos generados es complejo
Otro métodos				
Beneficios transferidos	Utiliza los beneficios obtenidos en un contexto extrapolándolos a un contexto distinto	Cualquier tipo servicios en los que puedan darse comparaciones razonables	Datos de valoraciones en otras áreas similares	Puede ser muy impreciso debido al cambio de muchos factores aún cuando los contextos parezcan "similares"

Fuente: adaptado de Pagiola y otros, 2004